

10/19/84  
cc - McCooling  
Larry - FYI

PROJECT VARIANCE DATE: 09/05/84

AR NO.: 3808  
CEA NO: 3808  
VARIANCE NO: 2

CORPORATE ENGINEERING DEPARTMENT

TITLE: Main South Trunk Sewer

       PROJECT SCOPE/PREMISES

LOCATION: W. G. Krummrich Plant

  X   EXECUTION

To: D.R. Bowers CS6G  
J.O. Bright CS6G  
E.R. Hartman CS6H  
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V.T. Matteucci B2SC

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J.W. Molloy 1740  
R.L. Nelson 1740  
M.E. Nolan F1EA  
R.L. Wiese CS6G

PROJECT SUMMARY:

This project will install a new 42" diameter trunk sewer to carry all of the plant sewer load now carried by the two Sauget Village sewers at the south end of the plant.

DESCRIPTION:

This variance communicates the results of the Budget Estimate and revises the mechanical completion date for this project.

JUSTIFICATION:

In summary, the results of the Budget Estimate reaffirm the \$5,000k capital cost of the AR Estimate. The expense costs have increased and the schedule has been extended for valid reasons.

The lump-sum bids solicited from contractors for the sewer work were higher than anticipated and contained in several instances, unacceptable terms and conditions.

APPROVAL: *D.R. Bowers*  
D.R. Bowers  
Mgr. Engrg., MIC Engrg.

*G.A. Grundmann*  
G.A. Grundmann  
Project Manager

APPROVAL: *Fred & Mayse*  
F.A. Mayse  
Mgr. SPEO, MIC Engrg.

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JUSTIFICATION (continued):

Subsequently, a team with representatives from the plant and engineering evaluated lower cost alternatives. Contractors were asked to evaluate and independently suggest lower cost facility and construction techniques. In final contract negotiations with the contractor selected, the contract basis was converted to a Guaranteed Maximum Price (GMP) contract in lieu of the lump-sum contract originally planned. One major advantage of the GMP contract is that it includes shared savings of costs with the contractor, thus providing an incentive for the contractor to perform beyond normal expectations, while providing an additional opportunity for Monsanto to reduce costs. Additionally, the GMP contract minimizes potential for upside costs and change orders to Monsanto.

Other contract terms and conditions were carefully reviewed, negotiated, and resolved to give Monsanto a more favorable contract package.

Extra engineering time was expended on this project in favorable ways. In addition to improving the overall sewer routing, a number of manholes were eliminated and several obstructions were eliminated, including an increased clearance away from the xylene tank farm.

Expense costs are forecasted to increase on this project. There are two major reasons for this increased forecast:

1. The potential cost of diverting the existing sewer flows during the construction of the new sewer was not adequately provided for in the AR Estimate to permit ongoing plant operations. It is recommended for budget purposes that an allowance of \$340k be forecast.
2. Operation of the dewatering pumps was originally included in capital costs. Accounting has advised that the work on these pumps will be maintenance and relocation work, which is properly categorized as Expense. The cost of this work is estimated at \$210k.

FINANCIAL SUMMARY \$K

	<u>AR</u>	<u>EFC</u>	<u>THIS VARIANCE</u>	<u>NEW EFC</u>	<u>OVER/UNDER AR</u>
<u>CAPITAL</u>	5,000	5,000	0	5,000	0
<u>EXPENSE</u>	700	700	500*	1,200	(500)

The estimated accuracy of this variance is +10%.

\*The additional expense is largely a forecast for diverting sewer flows during construction to maintain continuity of plant operations. This allowance was estimated with the successful contractor who has sewer construction experience. The actual costs have a potential to be much less if some

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FINANCIAL SUMMARY \$K (continued):

tie-ends can be accomplished without diversion. Engineering will work closely with the plant to do select construction and tie-ends during scheduled downtimes of plant units to minimize or eliminate diversion facilities pumping.

EFFECT ON PROJECT SCHEDULE:

There are several factors contributing to a longer project schedule.

Additional engineering time was taken for this project which resulted in a substantially improved overall sewer routing. This effort was carefully coordinated with plant personnel and was justified by the improved results.

In addition, the actual construction schedule for installing the sewer, as presented and documented by the successful contractor, will take several months longer to actually construct than was originally planned.

The cost reduction efforts, rebidding by the contractor with alternates, and contract negotiations resulting in a more favorable contract, took several months to complete.

Finally, the starting date of the project in the field has been delayed for over a month to date due to unresolved general craft labor contracts in Metro East.

Consequently, assuming resolution of labor contracts in September 1984, the mechanical completion of the project is now scheduled for January 1986, based on contract commitments and contractor schedules. The AR target completion date was May 1985.

GAG/mb  
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